From Seed to Seed

Flowering Plant Life Cycle

G-6

CONTENTS

01 Plant Beginnings

02 Plant Development

03 Seed Cycle

Plant Beginnings

01

Seed Germination Process

01

Water Absorption

Seeds absorb water, causing the seed coat to soften and swell, activating enzymes that begin the germination process.

02

Embryo Awakening

The embryo inside the seed awakens from dormancy, using stored nutrients to fuel initial growth before photosynthesis begins.

03

Root Development

The radicle emerges first, growing downward to anchor the seedling and absorb water and minerals from soil.

Early Growth Stages

Germination Process

Seeds absorb water, swell, and crack open. The embryo inside awakens, using stored food to push roots down and shoots up.

First Leaves Appear

Tiny seedlings emerge from soil with cotyledons (seed leaves). These first leaves capture sunlight to produce energy for further growth.

Root Development

Young roots extend downward seeking water and nutrients. Root hairs increase surface area, anchoring the plant and supporting early stem growth.

Plant Development

02

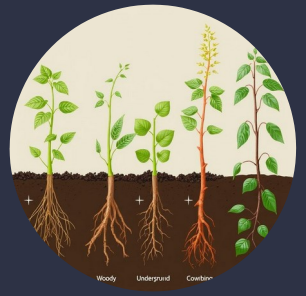
Stem and Leaf Formation

Primary Stem Development

After germination, the young stem emerges from the seed, growing upward against gravity while developing vascular tissues for water and nutrient transport.

Leaf Formation Process

Leaves develop from small buds along the stem, unfolding to capture sunlight for photosynthesis with specialized cells and veins.



Types of Stems

Plants develop various stem types including herbaceous, woody, underground, and climbing stems, each adapted for specific environmental conditions and growth needs.

Flowering and Pollination

Flowers Open

Petals unfold to reveal colorful blooms with stamens and pistils, attracting pollinators with bright colors and sweet nectar.

Pollen Production

Male parts called stamens produce tiny pollen grains containing sperm cells needed for plant reproduction.

Pollinator Attraction

Flowers use colors, scents, and nectar to attract bees, butterflies, and birds that help transfer pollen between plants.

Pollen Transfer

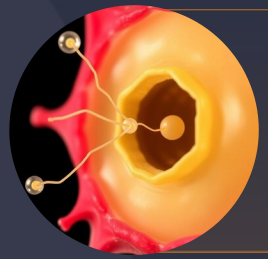
Pollinators carry pollen from stamens to pistils, either on the same plant or between different plants of the same species.

Fertilization Process

Pollen Meets Ovule

Pollen grains travel down the pollen tube to reach the ovule, beginning the fertilization process in flowering plants.

01



Male Meets Female

Sperm cells from pollen combine with egg cells in the ovule, creating a zygote that will develop into a seed.

02

Seed Development Begins

After fertilization, the ovule develops into a seed while the ovary transforms into fruit, protecting the developing embryo.

03

Seed Cycle

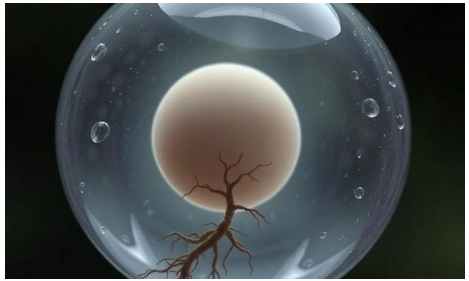
03

Seed Formation

01

Ovule Development

After fertilization, ovules inside the flower begin to develop into seeds, with embryo and endosperm forming inside the protective seed coat.



02

The fertilized egg cell divides repeatedly, developing into an embryo with tiny root and shoot systems that will grow when conditions are right.

03

Food Storage Formation

Nutrients accumulate in the seed as starch, proteins, and oils, providing energy for the future seedling during early growth stages.

Dispersal Methods

Wind Dispersal

Seeds with wings or parachutes catch the wind to travel far from parent plants, spreading over long distances.

Animal Transport

Seeds with hooks or sticky surfaces attach to animal fur, while tasty fruits encourage animals to eat and disperse seeds through droppings.

Water Carriers

Some seeds float on water currents in rivers or oceans, protected by waterproof coatings until reaching new growing locations.

Explosive Action

Certain plants forcefully eject seeds when pods dry and split open, catapulting seeds away from the parent plant.

New Growth Potential

Seeds Begin to Sprout

Germination begins as water activates enzymes, causing the seed to swell and the root to emerge, seeking nutrients from soil.

Blooming with Color

Mature plants produce colorful flowers containing reproductive organs, attracting pollinators with bright petals, sweet nectar and pleasant fragrances.

Reaching for Sunlight

Young plants develop stems and leaves, growing upward to capture sunlight for photosynthesis and producing energy for continued growth.

Pollinators at Work

Bees, butterflies and other creatures transfer pollen between flowers, enabling fertilization as pollen travels from stamen to pistil.

Thanks